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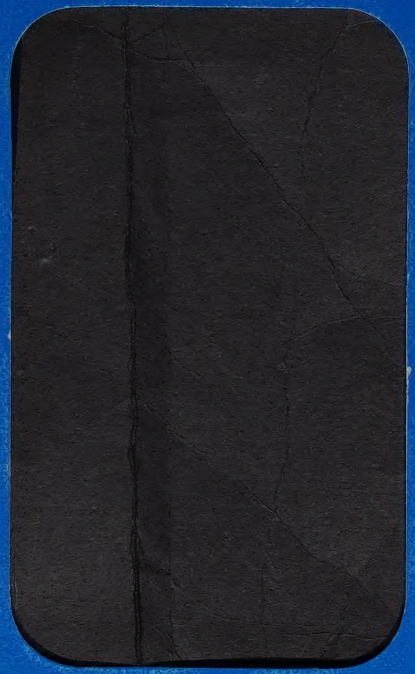
M13205X



SCHEMATIC MANUAL
ISSUE B

APRIL 1973

MULTI-SWEEP
159-E
SCHEMATICS

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ADDENDUM

Marka-Sweep 154-C/Multi Sweep 159D
Operator's Manual

SECTION IV, PAGE 8

4.2 Equipment Required

Delete: Subsection under "Equipment Required"

Add:

ITEM	REQUIRED SPECIFICATIONS	MANUFACTURER
OSCILLOSCOPE	Bandwidth--DC to 50 KHz	Tektronix, Type 503
	Vertical Deflection Factor--1 mv/cm minimum at 3%	
	Horizontal Deflection--.1 ms/cm sensitivity	
	Maximum input voltage capability of 200 DC or peak AC	
CW GENERATOR (1)	Frequency Range--5-30 MHz	Kay 990-A
	Accuracy ±2%	
	Output Level--0.5VRMS into 50 ohms (75 ohms)	

CW GENERATOR (2)	Frequency Range 10-150 MHz Accuracy ±2% Output Level--0.5VRMS into 50 ohms (75 ohms).	

NOTE

Utilization of Kay Model PM 7660 with 10 MHz and 30 MHz Harmonic Markers eliminates need for Generators 1 and 2.

RF POWER METER	Range--10 mw Accuracy--±1% full scale	Hewlett-Packard 432A or 431C
THERMISTOR MOUNT	Frequency Range--10 to 300 MHz Power Range--1.0 uw to 10 mw	Hewlett-Packard 478A
FRACTIONAL STEP ATTENUATOR	Frequency Range--DC to 150MHz Accuracy ±0.5db/step Total attenuation--40 db	Kay Model 1/432A
50 KC WAVETRAP, ABSORPTION TYPE	Frequency--±10%	"In Shop" produced item. Any equivalent means of indicating 50 KHz acceptable
TUNED DETECTORS	See Figure 4.5	"In Shop" produced item.
SPECTRUM ANALYZER (Optional) See 4.2 F-Alternate Method	Frequency Range 10-300 MHz	Hewlett-Packard 8551BRF Section 852A Display Section

4.2 F. Distortion Chart

Add: Alternate Method

1. A Spectrum Analyzer Check can be utilized instead of the previous method. Set Function Selector to Manual Sweep, and RF Level to 1.0VRMS.

2. Insert 10 db of attenuation, with the unit attenuator.

3. Connect RF output to input of Spectrum Analyzer.

4. Adjust the Spectrum Analyzer for a 10 to 300 MHz display, at a usable display level.

5. Slowly rotate the Manual Sweep control across its range, making note of the position of the Fundamental frequency. All extreaneous signals should be no greater than a point 30 db below that of the fundamental.

6. If an out of spec. indication is noted, add an additional 10 db of attenuation with the unit attenuator. Repeat Steps 4 and 5.

CAUTION

Recent improvements in the Model 154 and 159 sweep generators have made the following changes necessary before use of older versions of the PM7660 is possible. These changes have been incorporated in newer units.

PM7660 marker plug-ins with serial numbers as listed below must have the jumper connecting capacitor C9 and pin 6 of P1 removed before installation of the plug-in. Removing the jumper will not affect the operation of the marker plug-in when used with other models of the 154 or 159.

Units affected are all PM7660's with _____

_____five digit serial numbers (e. g. 30178)

_____serial numbers preceded by A or B (e. g. A1467 or B1215)

_____18-xx or 19-xx serial munbers (e. g. 18-10 or 19-25)

MODEL CHANGE ADDENDUM

D9739-1319

Change Model No. to 159D.

Change specifications to include:

RF Output: 1 volt rms into 50 or 75 ohms.

Frequency Range: 300 KHz-300 MHz.

1.1 TRIGGERED SWEEP OPERATING INSTRUCTIONS

The Triggered Sweep Module when used with a Multi-Sweep 159E, triggers the Sweeping RF output enabling the 0 - 300 MHz sweep frequency range to be contained in a 2 ms pulse. The sweep rate may be syncronized with the line frequency or may be varied over a 1 Hz to 200 Hz range. A blanking signal is developed which switches OFF the generator output amplifier during the unswept time. Because of the large RF on to blanked ratio, the RF output meter reading will be incorrect in the LL and VAR modes. For a correct reading switch to NOR.

1.2 CONTROLS AND CONNECTORS

Triggered Sweep Switch	This three position switch enables the operator to choose between LINE LOCK, Variable Rep Rates or NORMAL operation.
Normal	The 159E operates in the normal fashion, the Triggered Sweep circuit is effectively disconnected.
Line Lock	The 159E is triggered to sweep thru its frequency range in a 2 milli-second pulse every 65 milli-seconds.
Variable	The 159E is triggered to sweep thru its frequency range in a 2 milli-second pulse at a rate determined by the settings of the 159 sweep rate controls. The variable will operate over a Rep Rate range of 1 Hz to 200 Hz.
Ext. Mod	This connector provides the ramp voltage which sweeps the oscillator. It should be connected to the EXT. MOD connector on the front panel of the M/S 159. The 159 FUNCTION Selector switch should be set to EXT.

Horiz	This connector provides a sawtooth voltage that is syncronized with the oscillator sweep voltage. It should be connected to the oscilloscope horizontal input to provide the horizontal drive voltage when checking out the Triggered Sweep system. (See Diagram)

1.3 TRIGGERED SWEEP CHECKOUT PROCEDURE

1. Connect equipment as shown in Diagram,

2. Set M/S 159 controls for MAX Sweep width and 150 MHz Center Frequency.

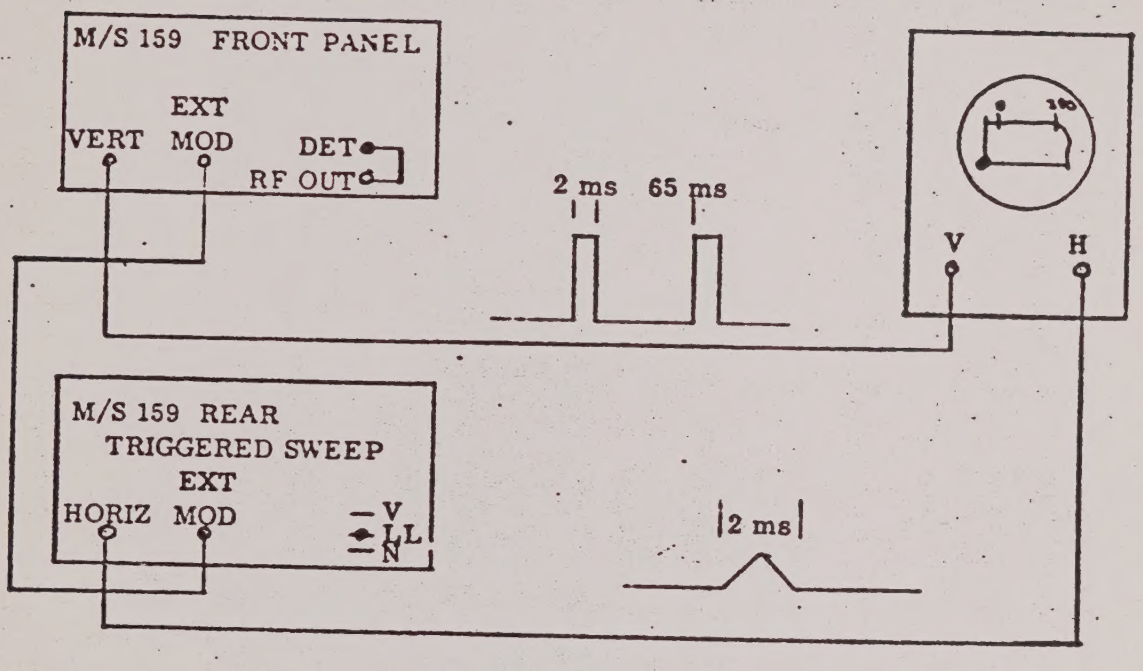
3. Set M/S 159 FUNCTION switch to EXT.

4. Set TRIGGERED SWEEP switch on 159 rear to LL.

5. The trace appearing on the circuit represents a detected 2 ms burst of RF sweeping from 0 to 300 MHz. The bright dot on the lower left hand corner of the trace results from the 65 ms OFF time.

6. For Variable Rep Rates set the TRIGGER SWEEP switch to VAR and select the desired rate, within 1 Hz to 200 Hz, with the M/S 159 Rep Rate controls. (The width of the RF pulse will remain at 2 ms).

7. Because of the large ratio of RF on to blanked time the RF output meter reading in the VAR or LL modes will be incorrect. For a correct reading switch to NOR.



159E TRIGGERED SWEEP CHECK-OUT INTERCONNECTION DIAGRAM